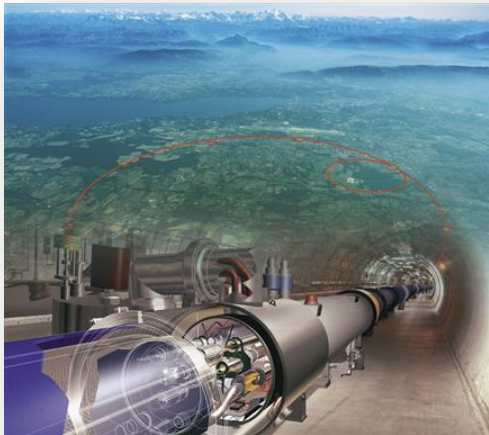


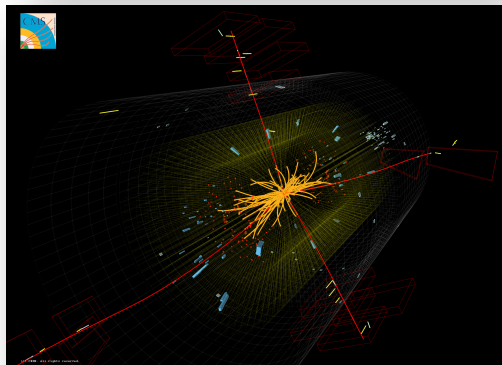


Transitioning to Industry

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Musings of a Recovering Particle
Physicist



August 10, 2020

My Path to Industry

➤ Academia

- Oglethorpe University (2002 – 2006) *Undergraduate*
- University of Florida (2006 – 2012) *Graduate*
- CERN (2007 – 2012) *PhD Research & Post-Doc*
- Valencia College (2018) *Adjunct Faculty*

➤ Aerospace/Defense Industry (2012 – Present)

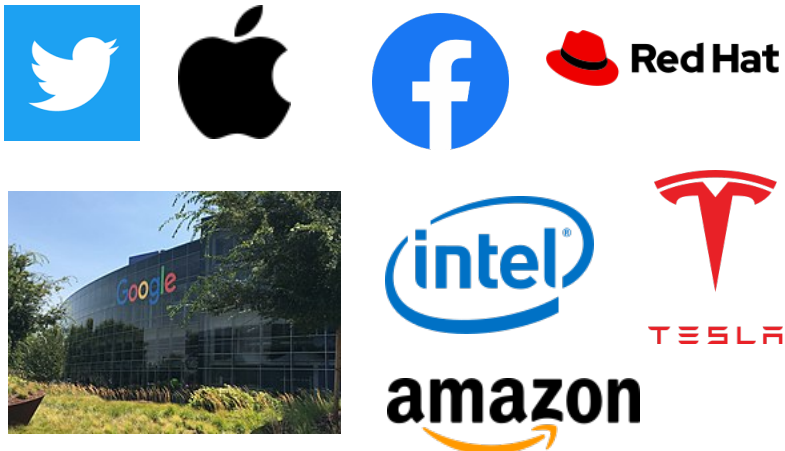
- Research Physicist
- Advanced Technologies Lead Engineer
- Engineering & Technology Manager – Algorithm Development

Entertaining the Thought

- The decision to leave academia after the PhD is a difficult and deeply personal one for many physicists – it certainly was for me.
- Many of us set out to pursue a professorship – a lifetime of studying science, the appeal of a comfortable intellectual life devoted to understanding nature at its most fundamental level
- The path to professorship comes with many challenges and uncertainties
 - Work/life balance
 - Pressure to publish
 - Competition with scientists across the globe for limited # of jobs
 - Limited choice in geographic location
 - Pressure to secure grants
 - Post-Doc wages
- Fortunately, many fulfilling career paths exist for physicists who are willing to embrace a transition to industry

Many Options Exists

Tech Sector



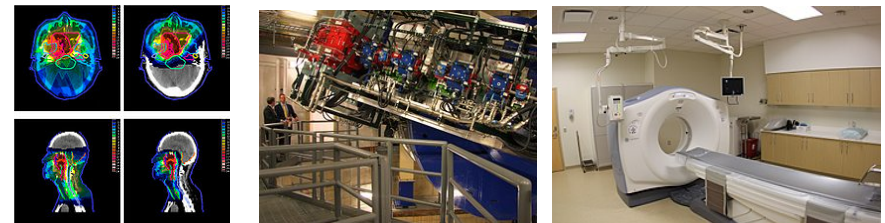
Defense/Aerospace



Finance



Medicine



Tips on Seeking Opportunities

- Very few companies post job requisitions with “Ph.D. Physicist” in the title
- Consider roles with Engineer, Data Scientist, Algorithm Developer, Quantitative Analyst, Research Scientist in the title
- Convert your CV to a resume suitable for each industry you are targeting (e.g., finance, defense, tech)

Converting the CV to Industry Resume

- Focus on skills that generalize and core competencies that are relevant to the job requisition
- Remove obscure physics jargon tied to your research concentration, e.g., *“Searched for New Physics Using the Same-Sign Leptons, Jets, and Missing Transverse Energy Topology”*
- Emphasize that you are published, but don’t bother enumerating all of your articles (remember that the jargon distracts) and provide a link to your full CV, publication list or SPIRES page
- Highlight ability to work in multi-disciplinary team environment
- Highlight any distinctions, awards, major accomplishments in generic terms

Resume Darwinism

- Big companies use talent recruitment professionals to screen resumes
- Most recruiters for technical jobs are not out looking specifically for physicists – we tend to be strong, but unconventional hires
- Recruiters will quickly evaluate your resume if it has some keywords in it that match the job requisition
- Your objective should be to add sufficient descriptive detail to your resume such that it gets picked up by the keyword search, but also so that it presents well when put in front of hiring manager
- Refresh your resume and its formatting frequently – seek peer review from someone in industry

HEP-Ex Skills/Experience in Demand

- Strong Programming Skills in C++, Python
- Algorithm Development: Signal processing, Kalman Filtering, Pattern Recognition
- Data Science, Big Data, Machine Learning
- Statistical Inference and Hypothesis Testing
- Monte Carlo Modeling & Simulation
- Technical Writing, Persuasion, and Presentation
- Thrive in large, diverse, multi-cultural teams
- Hardware experience: Fast Electronics, FPGAs,

Preparing for the Interview

- Study the public website for the company
- Get to know the products and critical information about it
 - Who is the CEO?
 - Where are they geographically located?
 - What is their mission statement?
 - Are they profitable?
- Prepare a good explanation for why you are excited to work there
- Prepare to answer technical questions on anything you advertised on your resume
- Prepare good questions

Questions to Ask a Hiring Manager

- Have you ever hired anyone with my background before?
 - If yes, how are they doing (e.g., work culture assimilation and strength of contributions)?
- Does the culture embrace STEM graduates, and specifically Ph.D.'s?
- What would my professional job title or labor grade be?
 - Is my Ph.D. counting toward my pay and professional experience?
- What are the career advancement opportunities from here?

Questions to Ask a Hiring Manager

- Who will I report to?
 - Will I get a chance to meet him or her during the interview process?
 - You should insist on meeting your potential manager before accepting any offer, as this person will have the biggest influence on the quality of your work life and career advancement.
 - Are they enthused to bring you on board?).
- Which project will I be working on when I join?

Questions to Ask a Hiring Manager

- Which of my skills will be most useful on this project?
- Which skills will I need to learn on the job to make the biggest impact?
- How does the company value work/life balance?
- What hours do my colleagues typically work?
- Is overtime often expected and if so, is it paid?
- How will my performance be assessed?

Main Challenges of Industry Transition

- Finding the right opportunity that is intellectually stimulating and leverages many of the skills you developed as a PhD or Post-Doc.
- Adjusting to “time cards”. For most industry roles every hour of your time must be accounted for
- Adjusting to less technical, but still very intelligent, peers colleagues and managers
- Adjusting to the profit-driven concept of providing a product or service to a community of customers
- Executing work toward short-term schedules and milestones
 - You’re not doing thesis-style research

Reflections on 8 Years in Industry

- The work can be very intellectually stimulating and can fulfill a sense of purpose, particularly if you believe in your company's mission
- The work/life balance is usually very good
- Great compensation packages (~2x-3x Post-Doc wages)
- Made many interesting friends from non-physics, but still technical backgrounds
- Job security is strong
- An advanced degree in physics prepared me to make uniquely strong contributions in areas where other STEM grads could not compete well
- You can remain connected to academia. I teach at my company and serve as a physics adjunct at a local college.
- I miss the joy of studying fundamental physics, but no regrets overall.

More Help

- I have interviewed 100+ candidates for technical positions in the US defense/aerospace industries and reviewed resumes for many more
- Reach out to me if you are a US citizen and would like
 - Some tips on converting your CV to an industry resume
 - Help preparing for an interview
 - Ideas for companies to target with your skillset
- You should establish a presence on LinkedIn and connect with other physicists who have made the transition as they are a great resource